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softens. Finally, the need of a high temperature for the combustion of tartaric and citric acid and the possibility of the oxidation of malic acid at lower temperatures explains why apples, sorbs, medlars, and other fruits which contain malic acid are able to ripen in cold climates, while grapes and oranges require warmer climates. It also explains why fruits containing malic acid ripen in cool places after picking, while grapes, and especially oranges and other citrus fruits, do so only imperfectly. However, by raising the temperature, fruits containing citric and tartaric acid will ripen in the fruit house.

E. F. S.

**Ferns of Nicaragua.**—An attractive-looking piece of work bearing the above title forms the second paper in the *Bulletin from the Laboratories of the State University of Iowa*, vol. iv, No. 2, pp. 116–224. The author of the paper is the well-known zoologist Mr. B. Shimek, who collected these plants on the island of Ometépe in Lake Nicaragua and in a narrow strip of country along the San Juan River. Over 120 species of ferns were collected in this small area in less than four months devoted to general botanical work. Judging from Mr. Shimek's statements, the fern flora of Nicaragua appears to be even richer in species than that of New Zealand, but the individuals are not so numerous. Only about one-fifth of the species listed by Mr. Shimek occur in Fournier's list of 121 Nicaragua ferns, and only about two-fifths in Mr. Helmsley's list of 135 species. Much of the territory is still only very imperfectly explored. The paper contains some interesting general remarks on tropical ferns, a key to the orders and families, and a list of the species collected, including helpful notes and a citation of books in which descriptions may be found. Several species are transposed into other genera, and one new species is described,—*Polypodium macbridense*. The text is supplemented by twenty well-executed half-tone plates.

E. F. S.

**Pharmaceutical Archives.**—With the beginning of the current year, owing to the large amount of original matter offered for the columns of the *Pharmaceutical Review*, the journal has been relieved of much of this matter by the starting under the same management of a second journal under the heading given above. The first number contains articles on the comparative structure of the leaves of *Datura stramonium*, *Atropa belladonna*, and *Hyoscyamus niger*, the popular names of Brazilian plants and their products, a chemical bibliography of morphine, and a study of the structure of the twigs

of *Fraxinus americana*. Though primarily intended for the pharmacist, these articles are of no little value to the botanist, and Dr. Kremers is to be congratulated on the promising outlook for his new journal. T.

**Indiana Botany.**—Several articles in the *Proceedings of the Indiana Academy of Science* for 1896, recently issued, are of interest to botanists; namely, "Notes on the Flora of Lake Cicott and Lake Maxinkuckee," by Robert Hessler; "Notes on Some Phanerogams New or Rare to the State," by W. S. Blatchley; "Periodicity of Root Pressure," by M. B. Thomas; "Notes on the Flora of the Lake Region of Northeastern Indiana," by W. W. Chipman; "Additions to the Published Lists of Indiana Cryptogams," by L. M. Underwood; "The Bacteriological Flora of the Air in Stables," by A. W. Bitting and C. E. Davis; "An Experimental Study on the Pathogenic Properties of Common Yeasts"; "Exceptional Growth of a Wild Rose," by Stanley Coulter; "A Revision of the Genus *Plantago* occurring within the United States," by Alida M. Cunningham, in which *P. minima* and *P. rubra* are described as new; "The Effect of Drought upon Certain Plants," by Clara A. Cunningham; "Additions to the Cryptogamic Flora of Indiana," by J. C. Arthur; "The Uredineæ of Tippecanoe County," by Lillian Snyder; and "The Occurrence of the Russian Thistle in Wabash County," by A. R. Ulrey. As might be expected, the papers are of very unequal value, and while those of local interest are useful, if somewhat fragmentary, the one monograph is scarcely likely to add materially to a knowledge of the group it deals with.

**Sugar Cane.**—The Bureau of Agriculture and Immigration of Louisiana has recently issued the first volume of a treatise on the history, botany, and agriculture of sugar cane and the chemistry and manufacture of its juices into sugar and other products, by Prof. W. C. Stubbs, Director of the Audubon Park Experiment Station at New Orleans. One chapter is devoted to the botanical relations of the plant, one to its anatomy and physiology, one to its modes of reproduction, and one to bacteriological notes on red cane. The remainder of the volume is historical and agricultural.

**Digestion in Pitcher Plants.**—It has been variously claimed that the digestion of proteides in the pitchers of *Nepenthes* is due to a digestive ferment secreted by them and to the action of bacteria growing in their secretion. Professor Vines, in the *Annals of Botany*